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ABSTRACT

The data reported in this paper gives depth to the picture of computers in society, in work, and in schools. The prices have dropped but computer corporations sell to schools, as they do to any other customer, to increase profits for themselves. Computerizing is a vehicle for social stratification. Computers are not easy to use and are hard to learn to use well. Schools play an important role in transmitting knowledge about how to use computers and by that increase sales and the rate of adoption. Workers and teachers object to the innovation in part because of design problems; computers do not always work well, are not always useful and can be a hindrance to getting things done. Some schools may be squandering money on computers instead of spending it on needed supplies. Where the quality of education was once rated on the ratio of teachers to students, it is now rated on the ratio of computers to students. (19 references) (BBM)

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Sociocultural Aspects of Computers in Education

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Educational practice is largely unexamined by the scholars who study the technological delivery of educational messages. The contextualizing sociocultural aspects are especially neglected. Educational communications and technology research concentrates on the efficiency of learning stimuli, instructional techniques and matching these with student characteristics. Manipulation is assumed to be a desirable activity and prediction is assumed to be a desirable goal. Ellsworth comments:

> Such research privileges questions of how individuals process information from educational media over and above questions about the ideological work of meaning construction, content selection, setting of objectives, and media use. The concept of information processing as developed within cognitive psychology and applied in educational technology cannot explain meaning, intent and significance. (1989, p. 49)

However, educational practice is quite suitable for analysis from critical theory viewpoints, as in the studies collected by Apple and Weis (1983). Cherryholmes' book *Power and Criticism* endorses the application of critical theory, "Criticism provides important opportunities to break with dominant readings and interpretations." (1988, p. 158). Cherryholmes warns this valuable quality of criticism may also cause discomfort in people because it demystifies myths. A false rhetoric that makes cultural things appear natural is often confronted (Barthes, 1973, p. 153-155).

Who is Doing What to Your Computer?

The local supermarket has a program for shoppers to save their receipts for putting computers into schools. Fund raising programs have existed in the U.S. for a long time but there is a qualitative difference between past and present efforts. Putting audiovisual equipment in schools in earlier decades differs in social meaning from putting computers in schools today.

The standard models of educational communications represent the linear transmission of information and ignore the question of social context. This raises poststructural questions of power and meaning: Who is doing what to whom? Why are they doing it? What are the material pressures? What are the beliefs? Which people have a voice?

Through these poststructural questions this paper supports the goal of freeing students and teachers from hidden domination (Gibson, 1986; Giroux, 1983, 1988; Giroux & Simon, 1989). Exposing the ideological aspects of computers in school and society to critical analysis gives this papers' audience new beliefs to consider. Students of this audience will subsequently receive instruction that is more self-liberating. The crucial problem is not overcoming

teacher resistance to computers or student resistance to computers but the need to teach resistance. In this sense, resistance is redefined (Giroux, 1983):

> Theories of resistance provide a study of the way in which class and culture combine to offer outlines for a cultural politics. Central to such a politics is a semiotic reading of the style, rituals. language, and systems of meaning that constitute the cultural field of the oppressed. (p. 101)

Analysis of Computers in Education as a Cultural Field

The following observations about the sociocultural aspects of computers in education were collected as samples for analysis from the poststructural critical position.

- The computer industry exists to make money for itself. The values of the computer industry support the boardroom mandate to increase stockholders' share value. Hardware and software manufacturers sell products to educators to make a profit.
- A decrease in computer prices created widespread availability. In 1991 an external 40 megabyte hard disk usually costs under $400.00. In 1982 a popular Tandy 33 megabyte hard disk system sold for $14,980.00.
- The computer industry perpetuates itself by targeting the middle class as customers for computers at school and at home (Apple, 1988, p. 166-170).
- The human values of computers as cultural objects can be further corrupted by anthropomorphism. This is the fallacy of relating to computers as though they are people. It accompanies the oppression of relating to people as though they are machines, something described in detail by Zuboff's *In the Age of the Smart Machine* (1988).
- The difficulties of using and learning to use computers are seldom formally exposed. The difficulties are never acknowledged in instructional materials and the time needed for learning is concealed. Nevertheless, the authors of computer manuals show their own reactions to using and learning to use computers in their national organization's magazine. Even the people who foist computer jargon on the manual reading public find it hard to swallow, making it into puns and malapropisms: "Give me some modem cookies" (So, You Think You Know "Technology"?, 1988).
- People fight back against computerization. A mild response by office workers to the difficulties of using and learning to use computers is photocopying and circulating satirical illustrations from unknown sources. Beyond samizdat publication of office humor, computers represent real and alleged threats to health and safety (Bradley, 1989; Scalet, 1987; Stellman & Henifin, 1989).
- Computers in education are being pushed as a solution but teachers have a healthy cynicism to any quick fix. Like the underground circulation of cartoons in offices, school humor shows the intrusion of reform efforts. See *Everly's Laws of the Effect of Empirical Information on Educational Curriculum Reform*: "Law I: If it makes too much sense, educators will be suspicious of it" (Everly, 1987). Every researcher who plans conducting a study to prove the superiority of computerized instruction should read that

short, informal lesson on the sociology of educational innovations. A current bestseller, *Among Schoolchildren*, describes nine months of observation in a fifth-grade class by an author previously recognized for writing about computers (Kidder, 1989). Computers are absent from this book, suggesting computers may be overrated and their presence in schools exaggerated.

• Norman, a cognitive scientist and author of *The Psychology of Everyday Things*, believes that badly designed hardware and software teach people to be helpless when working with technological items (1988, p. 40-43). Sometimes technical things seem to have been made for another species (p. 187). Given these sort of social limitations, schools prepare the workers of tomorrow for using computers and for learning from computerized instruction on the job. In human factors engineering this is called fitting the people to the machine. It is the last resort for overcoming inadequate design. The cognitive science viewpoint and the ergonomic viewpoint converge in that things need fixing, not people.

• Computers in schools are seen as TECHNOLOGY (Tucker, 1985). Therefore they are more desirable than other educational resources such as replacement textbooks (Taylor & Johnsen, 1986).

Synthesis

The abstract discussion of computers in education by scholars delivering conference papers may conflict ideologically with the practice of using computers in education. Giroux's insights into schooling in *Theory and Resistance in Education* can be adapted to provide an explanation (1983, p. 46):

1. Computers in education cannot be analyzed apart from the socioeconomic context in which they are situated.
2. Computers in education are politically involved in the construction and control of discourse, meaning and subjectivities.
3. The commonsense values and beliefs that guide and structure computers in education are not *a priori* universals but social constructions based on specific normative and political assumptions.

In synthesis, the data reported here give depth to the picture of computers in society, in work and in schools. The prices have dropped but computer corporations sell to schools, as they do to any other customer, to increase profits for themselves. Computerizing is a vehicle for social stratification. Computers are not easy to use and are hard to learn to use well. Schools play an important role in transmitting knowledge about how to use computers and by that increase sales and the rate of adoption. Workers and teachers object to the innovation in part because of design problems: computers do not always work well, are not always useful and can be a hindrance to getting things done. Some schools may be squandering money on computers instead of spending it on needed supplies. Where the quality of education was once rated on the ratio of teachers to students, it is now rated on the ratio of computers to students.

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